of the porous bodies in the second porous cladding 5 is reduced as becoming more distant from the vitrified core rod 4, the dehydration can be conducted efficiently. The inventor confirms this phenomenon by experiments.

7) Second cladding vitrifying step

This step is a step of sintering the dehydrated second porous cladding 5 in an atmosphere of He mixed with chlorine or fluorine at temperatures of 1400 to 1500°C to form the second cladding to be transparent and vitrified. After the step is complete, a transparent optical fiber preform having an outer diameter of about 100 mm is formed.

Additionally, the weight of the second cladding becomes about 12 times that of the vitrified core rod 4. To make the OH groups of the cladding to be nearly equal to that of the core, the density of the cladding may be reduced. However, when the density of the second porous cladding 5 is made to be nearly the same as that of the porous core rod 1, the outer diameter of the second porous cladding 5 becomes extremely large, which is not practical for facilities.

The density of the second porous cladding 5 needs to be set greater than that of the porous core rod 1. The removal efficiency of the OH groups is declined in the dehydrating step. Accordingly, the OH group concentration of the second porous cladding 5 becomes higher than that of the vitrified core rod 4. However, when the OH group concentration of the second

porous cladding 5 is made 50 ppm or less, transmission losses to be practical problems in the waveband of 1.36 to 1.43 μm were not generated at D/d of 4.0 or more.

Furthermore, the method of fabricating the optical fiber preform of the above one embodiment is that the inventor was dedicated to experimentally studying, setting and carrying out the method of fabricating a large-sized optical fiber preform suitable for performing the WDM transmission utilizing the entire wavelengths of 1.25 to 1.60 μm.

In other words, the method of fabricating the optical fiber preform of one embodiment has preferable conditions for fabricating the optical fiber preform capable of fabricating the preform for the optical fiber mentioned above with excellent productivity and only by VAD.

For example, in the step of producing the porous core rod 1, D/d, which is the relationship between the outer diameter d of the core 2 and the outer diameter D of the first cladding 3, is to be an index indicating the extent that OH groups diffuse from the second cladding to the core. Since the OH groups hardly diffuse to the core when D/d is great, greater D/d is desirable in this point. On the other hand, when D/d is made greater while D is limited for facilities because of equipment configuration for producing the porous core rod 1, the core diameter d becomes relatively smaller. On this account, D/d is desirably smaller.

Then, in order to realize drawing a long optical fiber, the inventor experimentally determined the OH group concentrations for D/d and the second cladding, which allow the core diameter d to be greater as much as possible and reduce the OH group concentration of the core 2 to 0.8 ppb or less by weight ratio.

Consequently, it was found that D/d is set 4 or more in order to maintain the OH group concentration of the core to be 0.8 ppb or less when the OH group concentration of the second cladding is set 50 ppm by weight ratio. In other words, it was found that the core diameter d can be made greater up to D/4 and thus $D/d \geq 4.0$ was set in the step of producing the porous core rod 1 as described above.

Additionally, the inventor also experimentally determined, properly set and implemented the other conditions.

Next, one embodiment of the method of fabricating the optical fiber in the invention will be described. For example, an optical fiber can be obtained by heating the tip end part of the optical fiber preform, which has been obtined in the fabrication process of the optical fiber preform described above, at a stemperature of about 2000°C for drawing. The outer diameter of the optical fiber is formed to be 125 μm. Typical resin coating is applied to the optical fiber and thereby a practical mechanical strength can be obtained by protecting the optical fiber surface.